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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,332	03/19/2004	Thomas J. Smith	60680-1894	7014
10291	7590	03/31/2006		
RADER, FISHMAN & GRAUER PLLC 39533 WOODWARD AVENUE SUITE 140 BLOOMFIELD HILLS, MI 48304-0610			EXAMINER LOPEZ, FRANK D	
			ART UNIT 3745	PAPER NUMBER

DATE MAILED: 03/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/804,332

Applicant(s)

SMITH ET AL.

Examiner

F. Daniel Lopez

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 10 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Response to Amendment***

Applicant's arguments filed January 10, 2006, have been fully considered but they are not deemed to be persuasive.

Applicant argues that Sakata only deals with rotatable shafts; and therefore the teachings of Sakata would not be combined with Frame et al. Applicant is mistaken. Sakata indicates that fig 9 looks at a conventional piston ring (column 2 line 64-67). This indicates that the described invention is for a piston ring, and therefore the teachings of Sakata would be combined with Frame et al.

Applicant argues, since neither Sakata nor Frame et al teaches using PEEK as a coating, that there is no motivation to coat the piston ring of Frame et al. Frame et al teaches coating a portion of a piston ring with PTFE. Since Sakata teaches the equivalence of PEEK and PTFE, it would have been obvious at the time the invention was made to one having ordinary skill in the piston seal art, to use PEEK as the coating instead of PTFE.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 112***

Claims 12-14 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 12-14 line 2-3 "oxy-1,4-phenylene- oxy-1,4-phenylene- carbonyl1,4-phenylene" does not further limit claims 1, 6 and 10, respectively; since identically a polyaryletherketone polymer is oxy-1,4-phenylene- oxy-1,4-phenylene- carbonyl1,4-phenylene (see e.g. Grobe et al column 2 line 14-16).

***Claim Rejections - 35 USC § 103***

Claims 1-14 are rejected under 35 U.S.C. § 103 as being unpatentable over Frame et al in view of Sakata. Frame et al discloses an aluminum piston (12) in a steel cylinder having a piston ring (14) in a piston groove (18), wherein the piston ring has a thermal set resin coating (32) on a lower surface, wherein the thermal set resin includes PTFE; but does not disclose that the coating is a polyaryletherketone polymer.

Sakata teaches, for a piston ring including a synthetic resin, the equivalence of using either PTFE or PEEK (e.g. column 1 line 33-38) as part of a piston ring.

Since Frame et al discloses a piston ring with PTFE; and Sakata teaches the equivalence of using either PTFE or PEEK as part of a piston ring, it would have been obvious at the time the invention was made to one having ordinary skill in the art to replace the PTFE in the coating of Frame et al with PEEK, as taught by Sakata, as a matter of engineering expediency.

Since PEEK is the abbreviation for the polyaryletherketone polymer, which is defined by poly (oxy-1,4-phenylene- oxy-1,4-phenylene- carbonyl1,4-phenylene) (as disclosed by Grobe et al e.g. column 2 line 14-16), it meets the claimed limitations.

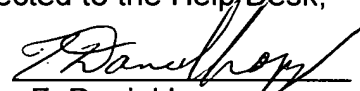
**Conclusion**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Lopez whose telephone number is 571- 272-4821. The examiner can normally be reached on Monday-Thursday from 6:15 AM -3:45 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Look, can be reached on 571-272-4820. The fax number for this group is 571-273-8300. Any inquiry of a general nature should be directed to the Help Desk, whose telephone number is 1-800-PTO-9199.



F. Daniel Lopez  
Primary Examiner  
Art Unit 3745  
March 30, 2006